REMARKS

By this Response, Claims 18-22 are cancelled. Claims 11 and 15 are amended. Claims 23 and 24 are newly added. No new matter has been added. Support for the amendments and new claims may be found in the specification and figures of the application. After entry of this Amendment, claims 1-10, 11-17, and 23-24 will be pending in the patent application, of which claims 1-10 are withdrawn. Reconsideration and allowance of the present patent application based on the following remarks are respectfully requested.

Claims 11-14 and 16-17 were rejected under 35 U.S.C. §102(b) as being allegedly anticipated by U.S. Patent 5,525,808 to Irie et al. (hereinafter "Irie"). The rejection is respectfully traversed.

Claim 11 recites a lithographic apparatus comprising, *inter alia,* a sensor; a processing unit arranged to communicate with the sensor; and a beam generator arranged to project an alignment beam to at least one of a plurality of alignment marks, of which desired positions are known, wherein the sensor is arranged to measure positional parameters for each of the plurality of alignment marks based on the projected alignment beam and to transfer the measured positional parameters to the processing unit, the positional parameters based on a plurality of diffraction orders generated by projecting the alignment beam to the at least one of a plurality of alignment marks, and wherein the processing unit is arranged to determine at least one parameter of a model providing information about a position of the substrate, based on the measured positional parameters, and wherein the measured positional parameters are weighted with variable weighing coefficients, the variable weighing coefficients based on the diffraction orders, and wherein the processing unit is arranged to determine a numerical value of at least one of the weighing coefficients and the at least one parameter of the model simultaneously. Applicants respectfully submit that Irie fails to disclose or anticipate each and every feature as recited in claim 1.

Applicants note that the Office Action fails to address any of the claim language, instead relying on a copy of claim 11, and the Examiner noting that, "as best understood," Irie anticipates the features cited in the claims. To anticipate a claim, the reference must teach **each and every element** of the claim. MPEP §2131. The lack of focus on the claim language makes it nearly impossible for

Applicant to respond, as the Office Action leaves Applicant in the position of having to guess what structures or acts of Irie are alleged to correspond to the recited apparatus of claim 11.

Irie describes choosing three shot areas on a wafer, <u>weighting</u> each coordinate position of the three shot areas on a static coordinate system <u>according to a distance</u> between another shot area (e.g., the center of wafer) and each of the three shot areas, and calculating coordinate positions of a plurality of shot areas using the weighted coordination positions. *See, e.g.,* Irie at column 5, lines 1-14. Also, Irie discloses weighting alignment data of a sample shot area with a larger coefficient based on the determined distance between a sample shot and the given shot area. *See, e.g.,* Irie at column 5, lines 15-24 and FIG 1.

More specifically, the weighting coefficient of Irie is expressed as a function of a <u>distance between a chosen shot area and a sample shot area</u>. *See, e.g.,* Irie at column 13, lines 59-68. Thus, in the apparatus of Irie, the closer a chosen shot area is to the sample shot area, the greater the weighting coefficient. Also, to change or adjust the degree of weighting (or the value of the weighting coefficient W_{in}) in Irie, a value is set for a parameter, S, and an equation expressed as a function of the distance between the chosen shot area and a sample shot area is solved. *Id.*

Claim 11, however, recites features which the cited portions of Irie fail to disclose or anticipate. Specifically, in claim 11, the variable weighing coefficients of claim 11 are <u>based on the diffraction orders</u>. Irie clearly do not disclose or anticipate at least this feature.

Applicants wish to note that in the present application the weighing coefficients are variable or dynamic. More specifically, the weighing coefficients are variables that can be varied while solving a wafer model (e.g., using a least squares method). *See, e.g.,* Specification at page 16, paragraph [00062]. For example, the equations representing the weighing coefficients are solved together simultaneously with the equations for the parameters. *See, e.g.,* Specification at pages 17-19, paragraphs [00072]-[00088].

Noting such, Applicants submit that claim 11 also recites that the processing unit determines a numerical value of at least one of the weighing coefficients and the at least one parameter of the model are <u>simultaneously</u> determined by the processing unit. Irie fails to disclose or anticipate this feature. Rather, the apparatus

of Irie notes setting a parameter S to determine the weighting coefficient W_{in} as a function of the distance between two shot areas. *See, e.g.,* Irie at column 13, line 45-column 14, line 27. Irie clearly fail to disclose or anticipate this feature.

For at least these reasons, Applicants respectfully submit that the cited portions of Irie fail to disclose or anticipate each and every feature of claim 11. Accordingly, Applicants request that the 35 U.S.C. §102(b) rejection of claim 11 over Irie be withdrawn.

Claims 12-14 and 16-17 depend from claim 1, and are submitted to be patentable over Irie for the reasons advanced above with respect to claim 1, as well as for the reason that they recite additionally patentable features.

Claim 15 was objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form. As noted above, claim 15 has been amended to include the features of original claim 11. Applicants respectfully submit that claim 15 is allowable, and request acknowledgement of such.

Claims 23 and 24 are allowable based on their dependency from claim 11 and for the additional features recited therein.

In view of the fact that Irie fails to teach each and every recited element of claims 11-17 and 23, Applicants respectfully request that the rejection be withdrawn and the claims allowed. In the event that the rejection is maintained, **Applicant requests that analysis and evidence be supplied with respect to each and every element recited in the claims in accordance with the requirements outlined in the MPEP.**

The rejections having been addressed, Applicants respectfully submit that the application is in condition for allowance, and a notice to that effect is earnestly solicited.

If any point remains in issue which the Examiner feels may be best resolved through a personal or telephone interview, please contact the undersigned at the telephone number listed below.

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Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,

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